

LBNE LAr Parameters Spreadsheet

Version 10.6 - 11/4/2011

Changes highlighted in RED

33 kton

Input value

Calculated

Reference Design, 800'

Quality Meaning

*** Stable, well understood parameter

** Reasonably well defined parameter

* Rough estimate

Parameter	Value	Units	Qual ity	Req ID	Notes
Anode Plane Assembly (APA)					
Cathode Plane Assembly (CPA)					
Detector Module					
Cryostat module					
Membrane pitch	0.34	m	**		
Distance btw outermost CPA row centerline & wall	0.85	m	*		Rail anchors away from corner joints (=2.5*0.34m), space to work, purity monitors, instrumentation, etc
Cryostat Width	24.14	m			Integral multiple of membrane pitch
APA height above floor	0.5	m	*		Space for LAr piping, APA suppt rail, electronics
LAr depth above APA	0.5	m	*		Space for electronics
LAr Depth	15.0	m			
Minimum Ullage %	5.0%		***		Min value for control system response to fluctuations. Doc #2360
Minimum Ullage depth	0.8	m			
Ullage depth	0.96	m			
Cryostat Depth	15.98	m			Integral multiple of membrane pitch
Distance btw detector & far end wall	0.5	m	*		
Hatch clearance at near end	2.5	m	*		Space for access hatch and pump towers
Cryostat Length	48.62	m			Integral multiple of membrane pitch
Cryostat Surface Area	4673	m^2			
Cryostat Volume	18756	m^3			
Total LAr Mass	25	kton			
Ambient air pressure	0.85	bar	**		At elevation 4500 feet above sea level
Ullage operating pressure	130	mbarg	**		Range 50 to 200 mbarg
Relief valve set point	250	mbarg	**		
Roof truss maximum design pressure during cryostat relieving	350	mbarg	**		During relief condition, 110% overpressure + vent pressure drop.
Roof truss maximum deflection	109	mm	**		Max allowable deflection = Span/240 in accordance with ICC international building code
Insulation space pressure	30	mbarg	**		purged with argon
Pressure at bottom	2217	mbarg	**		Ullage pressure + liquid head
Electronics					
High Voltage					
Cryogenics					
Detector Depth					
Radioactive Background					
Veto System					
Veto Configuration					
Veto Counter					
Photon Detector					
DAQ					
Cavern & Pit					